

4.4: Discussion

Discussion

Write a minimum one-page (12 font, single spaced) discussion on the experiment conducted this week. Address **at least one question in each category** as fully as possible integrating the collected data, providing explanations for the observed trends, and evaluating whether your original assumptions about the experiment were validated by the results. **The assignment will be graded on completeness, clarity of the explanations and the meaningful integration of the collected and calculated data.** Correct grammar and appropriate format for the chemical formulae and chemical reactions is expected. **You may use the outline included at the end of this document on how to build your essay to address each category.**

1. (Existing knowledge, research, and views) Define electromagnetic radiation in your own words and describe what a spectrophotometer does with it.
2. (Experimental design) Propose at least one more item that you could use instead of a CD to build your spectrophotometer and describe why it would be suitable.
3. (Analysis) Provide an argument for why the slit through which light enters the spectrophotometer needs to be very narrow.
4. (Analysis) Provide an argument for why it is important to cover all the slits and corners on the box before using the spectrophotometer.
5. (Analysis) Compare the spectra of the various light sources you looked at. Identify at least one difference and at least one similarity among them.
6. (Existing knowledge, research, and views) Describe the color of the Sun and provide an argument for why in the USA children color their Sun yellow.
7. (Analysis) Identify the wavelength for yellow. Provide an explanation for choosing a number or a range.
8. (Analysis) Provide an argument for why a shirt would appear yellow. (HINT: Is the color of objects emitted or reflected?)
9. (Analysis) Provide an argument for why a lightbulb would appear yellow. (HINT: Is the color of light emitted or reflected?)
10. (Existing knowledge, research, and views) Each element has a unique spectrum that identifies it, like a fingerprint for humans. Describe how you would use your spectrophotometer to identify an element.
11. (Existing knowledge, research, and views) Each element has a unique spectrum that identifies it, like a fingerprint for humans. Describe what causes these emission spectra.
12. (Existing knowledge, research, and views) Describe how sparklers work. Provide as much detail as you deem necessary.
13. (Existing knowledge, research, and views) Identify the colors that can be produced by sparklers. Indicate the elements responsible for each color.
14. (Existing knowledge, research, and views) Using the videos as your reference, describe at least two applications for converting energy into light in as much detail as you deem necessary.

Recommended discussion outline:

Electromagnetic radiation is A spectrophotometer is an instrument that works by ...

The parts of the spectrophotometer are ... The purpose of the CD in the spectrophotometer is and it can be replaced with a because If the slit was widened, it would... If the inside of the box wasn't dark, it would If the peephole wasn't looking directly at the CD, we would see ...

I tested the following light sources: ... The difference between the collected spectra is, and that is due to The similarity between the collected spectra is, and that is due to

The color of the Sun is ... and we observe it as ... because ...

The difference between the perceived color of objects and light is ...

An element can produce a unique combination of wavelengths when it is ... and then ...

In this experiment we assumed

The purpose of the experiment was ... By performing this experiment, I learned ...

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